

On the hill tops on the hot fair days from about ten o'clock in the morning until about one hour after noon, the flowering shrubs are surrounded by hundreds of butterflies and day-flying moths of numerous species. Many species are usually found at rest only on these hill tops and this is especially true of the tailed *Papilios* with the exception of a species similar to the *Papilio marcellus* which is occasionally seen resting on damp patches of ground in the low lands.

This predilection for the hill tops by certain species among the Lepidoptera is a strange manifestation of their habits of migration.

Perhaps the most striking and spectacular feature in the habits of the Lepidoptera on the Isthmus of Panama, in fact among all insect life in this region, is the occasional marvelous migration of *Uranus fulgens*. During June and July in 1907 this diurnal, asymmetric moth migrated across the Isthmus in a general easterly direction in vast numbers. Group counting indicated that the daily number which passed amounted to hundreds of thousands. They flew no higher than ten feet except at obstructions and the maximum occurred from dawn until about eight o'clock in the morning and from four o'clock in the afternoon until dusk, with a few thousand stragglers during the other daylight hours. They flew along special courses in a rapid, long zig-zag manner and the migration was not interrupted by the rains. Of the millions that passed I only observed one at rest and that was on a leaf. In 1908 and 1909 the migration was limited to a few thousand individuals beginning in late May and extending through June and into July with the same characteristics as the 1907 flight. In 1915 there was another enormous migration but not equal to the number in 1907, but having the same characteristics as to the routes, time, manner of flight and the absence of resting individuals. During these migrations *Uranus fulgens* was observed simultaneously at all points on the Canal Zone and there were about an equal number of males and females.

BOOK REVIEWS.

ORTHOPTERA OF NORTHEASTERN AMERICA WITH ESPECIAL REFERENCE TO THE FAUNAS OF INDIANA AND FLORIDA. BY W. S. BLATCHLEY. The Nature Publishing Company, Indianapolis, 1920. 784 pp., 7 plates, 246 text figures, bibliography, glossary, index to synonyms

and new generic assignments recognized in the work, also general index.

Professor Blatchley, to whose industry entomologists are already indebted, has produced another book that will gain for him the thanks of many students of Nature. This time it is about grasshoppers, katydids and their kin. Following the introductory chapter on classification, structure, collecting, preservation of specimens, etc., there follows the "Descriptive Catalogue of the Orthoptera of the Eastern United States and Eastern Canada." Under this caption, which very closely gives the scope of the book, are included the earwigs or Dermaptera, which are often treated separately. The work is an expansion of the author's Orthoptera of Indiana, issued in 1903. In the present volume 353 species and 58 varieties are recognized, of which the author, on page 4, states that he has personally examined all but five. There are keys for the separation of suborders, families, subfamilies, genera and species; each species is also more fully described under a separate heading, with notes on distribution, song (if it has one), habits, etc. There are also many helpful illustrations. The writers who have made observations which the author has used in preparing these accounts are given full credit, and if Mr. Blatchley does not agree with their opinions, both sides are stated, so that the student will be aware that doubt exists.

It is not to be wondered at that Mr. Blatchley does not agree with some other students as to the limits of certain species, or the names by which they should be known. At the present time we do not know exactly how many species of oaks inhabit eastern North America, nor are botanists agreed as to the names in use; grasshoppers have been studied much less, and are far more elusive. The writer, for instance, from his experience afield and from the specimens collected on Long Island and Staten Island, thinks that *Spharagemon wyomingianum* Thomas and *Spharagemon scudderi* Morse should be considered as distinct, while Mr. Blatchley thinks that *scudderi* is a "synonym of *wyomingianum*," but as usual he devotes much space to the dissenting opinions. Gradually these matters will be more fully adjusted, and meanwhile the entomologist will be thankful that he has at hand so useful and accurate a book containing information often in great detail concerning the Orthoptera of eastern North America.

WM. T. DAVIS.

MANUAL OF THE ORTHOPTERA OF NEW ENGLAND, INCLUDING THE LOCUSTS, GRASSHOPPERS, CRICKETS, AND THEIR ALLIES. BY ALBERT P. MORSE. Proceedings of the Boston Society of Natural History. Vol. 35, No. 6, pp. 197-556, plates 10-29. April, 1920.

This excellent work, which shows great care in its preparation and knowledge of the subjects treated, has been promised to students of Nature for several years, and will now be received with much appreciation. The intro-